

ordinary telescopic method and by the spectroscopic method described in our former notes. It was found that the difference between the times of observation by these methods was *more than two minutes*, contact being observed by the spectroscope first. Now, if the contact had been observed last by the spectroscope, there was an obvious condition of the observation to which the discord might have been attributed; but there is now no room for doubt that the sun's extreme edge which we actually see in a telescope differs physically from the part just within it, although there is no difference to the eye—in fact, that it gives a spectrum of bright lines, while the spectrum of the true subjacent sun gives a continuous spectrum with dark lines. Further, the physical difference to which we refer would probably tend to make this stratum variable in thickness and luminosity. Nay, we may already hazard the question whether there is not here a condition which may have something to do with the various times of contact recorded by observers having object-glasses widely differing either in aperture or in the over- or under-correction of the chromatic dispersion.

Another victory achieved by the Italians is the determination of the nature of the atmosphere of Venus. The ring round the planet, which in the former transits as in the present one was visible round Venus both on and off the sun, indicates in the spectroscope that in that planet, as in our own, the atmosphere is composed to a certain extent of aqueous vapour.

Mr. Proctor pointed out some time ago the great value of photographs taken at the Cape of Good Hope in combination with those secured at Nertschinsk and Roorkee. We have no information that any photographs were taken at the Royal Observatory at Cape Town, but a correspondent informs us that fourteen successful photographs were taken at Cape Town, two of them showing distinctly the black drop.

The *Times* then refers to the final appendices to the "Recueil de Memoires, Rapports et Documents relatifs à l'observation du Passage de Venus sur le Soleil," as enabling us at length to refer to the doings of the Commission appointed by the French Government. The records extend from February 1869, when the Government first moved in the matter, to a few months ago, when the final instructions on the methods to be adopted to guard the observations against risk of loss were issued.

The first action of the French Government was to ask the Academy of Sciences to consider the places to be occupied, and the number of observers; the instruments to be used; the additional researches which might be undertaken by the observers sent to the Southern Hemisphere; and, finally, whether an Astronomical Congress would not be desirable to bring about a uniform system of observations.

A strong commission was at once appointed, composed of mathematicians, astronomers, physicists, and chemists, in order that the problem might be considered in an efficient manner. Strangely enough, the name of M. Leverrier, the distinguished Director of the Paris Observatory, does not appear on the commission; he did not think the observations of the Transit necessary to prove the accuracy of his values of the solar parallax. Happily, his voice was overruled. The course taken, as the *Times* remarks, suggests how desirable some similar procedure here would have been.

"There are very many points of the greatest interest," the *Times* continues, "raised by the contents of this large volume to which we should refer did space permit; from beginning to end it shows how a nation should set itself to work—how all the intellect of a nation can and must be utilised, when a great problem involving many kinds of special knowledge has to be attacked. It is often said that in France science

is crushed by a dead weight of officialism, and that in England it is free. However true this may be of teaching, there is ample evidence in this volume that, in one branch of research at least, the very opposite of this statement is much nearer the truth, and the painful discussions which some time ago occurred in our own columns and elsewhere, the 'Appeals to America,' the action of the Board of Visitors of the Greenwich Observatory, and the like, afford a strong argument—if, indeed, one were needed—that the growth of science necessitates that in all future national enterprises of the kind the example of the French and of all the other Governments should be followed. In this way only, in our opinion, can the national scientific honour be upheld, while the officials concerned in carrying out the work would be strengthened in their positions and shielded from a responsibility too great for individuals to bear."

## NOTES

THE arrangements for securing observations of the Solar Eclipse of April 6 are progressing most satisfactorily, thanks to the energy of the Royal Society Committee and the varied knowledge that has been brought to bear upon the various points of attack. Lord Salisbury has brought the proposed action of the Royal Society before the Council of India, and such instructions have already been telegraphed to India as will probably result in this eclipse being observed with a wealth of observers and instrumental appliances beyond all precedent.

CAPTAIN NARES, who is to command the English Arctic Expedition, has arrived in London. Commander Markham returned on Saturday from Dundee, after having entered six good men, tried seal and whale fishers, as ice-quartermasters. Staff-Surgeon Thomas Colan, M.D., of the *Unicorn*, drill-ship of the Naval Reserve at Dundee, has been selected by the Admiralty as senior medical officer of the Expedition. With regard to the proposed German Expedition, the desire is, we believe, if the funds can be raised, to form a scheme of co-operation between the two exploring expeditions. Surely our brother Teutons, richer now than ever they were, and whose zeal for knowledge is proverbial, will not allow this splendid scheme to be marred for lack of funds.

THE Museum of the Royal College of Surgeons contains a series of casts of the interior of the cranial cavity, representing exactly the form and size of the brain (when covered by its membranes), of men of various races, and of many species of animals. With a view to diffuse the information to be derived from the study of these casts, and believing that many educational institutions will be glad to avail themselves of the opportunity of possessing them, the Council of the College has authorised the issue of copies at the lowest price at which they can be reproduced, which will partly depend upon the number likely to be required. The Conservator of the Museum would like those who desire to possess the whole or part of the series, which comprises many rare forms, to communicate with him on the subject.

AT its *séance* of Jan. 11, the Paris Academy elected a corresponding member in the section of Mechanics, in place of the late M. Burdin. Three candidates were proposed—M. Broch, the Norwegian mathematician, who obtained twenty-four votes; Prof. Stokes, F.R.S., twenty-one votes; and M. Calladon, one vote. Thus M. Broch was elected by only three votes over Prof. Stokes.

MR. SIMON NEWCOMB, the American astronomer, is now in Paris. He has paid a visit to the Observatory, in order to inquire into the possibility of constructing a large refracting telescope having a lens of one metre in diameter. A sum of

30,000*l.* was, as we have already intimated, placed at his command by Mr. Lick, the celebrated Californian capitalist, who is the founder of the Lick Observatory.

M. CHEVREUL, the great French chemist and director of the Jardin des Plantes, has been presented by the Minister of Public Instruction with the grade of Grand Officer in the Legion d'Honneur. This promotion is considered as being a compensation for the difficulties raised by the Ministry in the appointment of a Professor in the Museum. These quarrels had induced the venerable *savant* to resign.

THE *Bulletin* of the French Geographical Society for December contains an exceedingly interesting and carefully compiled paper by M. H. Duveyrier, entitled "L'Afrique Necrologique." This is a list of all the African explorers, from 1800 to 1874, who have met their death while doing their work, either from disease caught in the country, or by murder, or other causes; a very large proportion have died from "intermittent fever." The list includes not only those whose object was purely geographical discovery, but also those whose researches were connected with geology, meteorology, botany, zoology, ethnography, archaeology, or languages. The list is a sadly long one, numbering about 150; and M. Duveyrier, in each case, gives a brief account of the explorer and of the work which he accomplished; a large proportion of these martyrs to science are English. Accompanying the paper is an ingeniously constructed map, showing the place at which each traveller met his death.

IT is announced that the committee to whose hands the Sub-Wealden Exploration is entrusted have resolved to abandon the present boring after six ineffectual efforts to recover tools which have dropped down and obstructed the whole. The Diamond Boring Company having made a very favourable offer to commence again, a contract for the completion of 1,000 feet for 600*l.* has been agreed to, with a conditional promise to execute the second thousand feet for about 3,000*l.* additional. Mr. Willett, hon. sec., has guaranteed 600*l.*, and appeals for funds to carry on the enterprise.

MR. CHARLES DARWIN'S new work on "Insectivorous and Climbing Plants" is in the press and will be shortly published. The following are the contents:—Part I.: On the sensitiveness of the leaves of *Drosera*, *Dionaea*, *Pinguicula*, &c., to certain stimulants; and on their power of digesting and absorbing certain animal matter. Part II.: On the habits and movements of climbing plants. The book will be issued by Mr. John Murray.

MR. JOHN MURRAY has also preparing for publication the following two works in travel:—"The Land of the North Wind," being an account of travels among the Laplanders and Samoyedes, and along the coast of the White Sea, by Edward Rae; this book will be illustrated by a map and woodcuts: and a description of a journey to Tabreez, Kurdistan, down the Tigris and Euphrates to Nineveh and Babylon, and across the desert to Palmyra, by Baron Max von Thielmann. The title of the book will be "The Caucasus, Persia, and Turkey in Asia," and it will be translated from the German by Mr. Charles Heneage.

MESSRS. LONGMAN and Co. have in the press a translation of a work on the Primæval World of Switzerland, by Prof. Oswald Heer, of the University of Zurich. The book will be edited by Mr. James Heywood, M.A., F.R.S., and will be issued in two octavo volumes with numerous illustrations. The same firm will shortly publish a series of Elementary Lessons on the Structure of Man and Animals, with special reference to the principles affecting health, food, and cooking, and the duties of man to the animal creation; by Mrs. Buckton. This volume will be illustrated with wood engravings.

In the *Astronomische Nachrichten*, Nos. 2,009 and 2,016, are notes on the spectroscopic observation of fifty-two stars made by M. D'Arrest. The stars are chiefly of the 6th and 7th magnitude, and appear in the Bonn Catalogue. The colours of thirty-four of these stars are given, and the type to which each star belongs is generally mentioned. From an analysis of the notes we gain that there are in the list four red or reddish stars of type III. and two of type IV.; of reddish yellow stars there are nine of type III.; of yellow or orange stars there are thirteen of type III., and of the same type one brown and five colourless ones; on the remaining eighteen there are no remarks on colour. The author remarks on the different grades of spectra of type III., from an almost line spectrum to a discontinuous one of bands, as that of a Hercules, but that grades of colour do not always agree with grades of spectrum; and he thinks that the theory that the coloured stars are older because cooler than others cannot be received without numerous exceptions, and he has concluded that the temperature of the coloured stars may in general be lower than that of others, but that it is not proved; and further, that the greater age of these stars is without foundation. The author appears to take exception to the part of the address of M. Wurtz at the French Association, reported in *NATURE*, vol. x. p. 350, where he says of the stars, "We have classed them according to their ages. Stars coloured, stars yellow, stars white; the white are the hottest and the youngest... the coloured stars are not so hot, and are older." It certainly seems from M. D'Arrest's observation that there are exceptions to this rule, and a large number of stars must have their spectra and colours tabulated before it can be judged how far this law holds good.

AT the last meeting of the Photographic Society a paper was read by Mr. Hooper, "On the Origin, Aim, and Achievements of the Photographic Society, with suggestions as to its future development." The suggestions were, the necessity of obtaining a Royal Charter, the Society's claim upon the Government for a money grant and suitable premises, and the necessity of forming committees for scientific investigation. In the subsequent discussion, the general opinion was that there was little hope of obtaining the proposed Charter, and that it was a mistake to speak of photography as a science. "Science," one speaker said, "had done a great deal more for photography than photography had done for science."

AT the meeting of Convocation of the London University on Tuesday, the motion brought forward by Mr. A. P. Hensman, "That, in the opinion of Convocation, it is desirable that women should be permitted to take degrees in Arts in this University," was, after some discussion, withdrawn.

A RECENT decision has been given by the French Ministry in favour of female doctors. A certain Mlle. Domerque, of Montpellier, has received due authorisation to pass her examination for the doctorship.

WE are glad to see that by the decision of the Supreme Court at Sydney, N.S.W., Mr. Gerard Krefft has been restored to his position and house as Curator of the Sydney Museum. Mr. Krefft has been connected with the Museum for fourteen years, and in September last had been violently ejected by an order from the trustees, who, it seems, had in this exceeded their powers.

THE prospectus lies before us of a new Italian monthly journal, to be entitled, *Rivista Popolare di Scienze e Lettere*. Judging from the prospectus, its projectors have a high idea of the important place which science is daily assuming in the life of the world, and intend to devote a considerable proportion of the pages of their Review to subjects of scientific interest. The programme of the new journal is very comprehensive, embracing all departments of philosophy and physical science, and we most



heartily wish it complete success. The prospectus is dated from Lentini, in Sicily, where, we believe, the Review is to be published. It seems rather strange to make such an out-of-the-way place the head-quarters of so important an undertaking; we hope, however, its circulation won't suffer in consequence.

THERE are many signs that Italy is really awakened from her long dormancy and seems quietly determined to do her share of the modern world's work. The above announcement may be regarded as one, and we know that in more than one of the sciences valuable work is being done by Italians. In geography, especially, they seem inclined to revive the reputation which of old their country had; they have recently produced one or two noteworthy explorers, and their geographical magazine, *Cosmos*, is a model of typography and good editing. Only on Monday last, Prince Humbert, in returning thanks for his election as President of the Italian Geographical Society, spoke with warm approval of the project of an expedition to the African great lakes, and hoped that Italy would be worthily represented at the forthcoming Geographical Congress at Paris.

THE Queensland Government have received information that Hume, who proceeded in search of Classan, a supposed survivor of the Leichardt Exploring Expedition, perished for want of water fifty miles from Drynan's station on the Wilson River, in the Warrego district. O'Hea, another of the party, is also supposed to be dead. The third man, Thompson, has reached Drynan's station.

As about forty ladies and gentlemen have signified their intention to become members of the proposed Natural History Society at Watford, a meeting to found the Society and to elect a provisional committee will be held at the Watford Public Library on the 23rd inst., at seven o'clock.

P. W. WRIGHT, one of the late porters at the College of Surgeons Museum, commenced duty as dissecting-room porter at St. Thomas's Hospital about a fortnight ago. On last Tuesday week he wounded himself in the hand with a knife whilst assisting in a post-mortem on a child which had died of pyæmia. We regret to hear that he died in consequence of the wound, from the same disease, on Monday last, leaving a wife and five young children quite unprovided for.

M. J. DEBY, in examining the contents of the stomachs of mussels (*Mytilus edulis*) from the Brussels market, found thirty-seven species of diatoms, including *Hyalodiscus stelliger*, a species found previously only in Florida.

THE death of the veteran Dr. Gideon Lincecum, of Long Point, Texas (U.S.), is announced as having taken place at his residence on the 28th of November last, in his eighty-second year. Dr. Lincecum was well known to the naturalists of the United States on account of his abilities as an observer and the wonderful minuteness of his investigations into the habits and peculiarities of American animals. His contributions in this direction to the archives of the Smithsonian Institution, to the *American Naturalist*, to the Academy of Natural Sciences, and to the *American Sportsman*, were very numerous and varied. In addition to his contributions of notes, Dr. Lincecum was an extensive collector of specimens, especially of insects and reptiles of which he sent large numbers to the museums of the United States.

PROF. MARSH and his exploring party returned to New Haven, U.S., on Dec. 12, after an absence of two months in the Rocky Mountains. The object of the present expedition was to examine a remarkable fossil locality, discovered during the past summer in the "Bad Lands" south of the Black Hills. The explorations were very successful, notwithstanding extremely cold weather and the continued hostility of the Sioux Indians. The fossil deposits explored were mainly of Miocene age,

and, although quite limited in extent, proved to be rich beyond expectation. Nearly two tons of fossil bones were collected, most of them rare specimens, and many unknown to science. Among the most interesting remains found were several species of gigantic *Brontotheria*, nearly as large as elephants. At one point these bones were heaped together in such numbers as to indicate that the animals lived in herds, and had been washed into this ancient lake by a freshet. Successful explorations were made, also, in the Pliocene strata of the same region. All the collections secured go to Yale College, and will soon be described by Prof. Marsh.

DR. HUNT gives an account, in the Proceedings of the Boston Society of Natural History, of the contents of the stomach of a mastodon lately found in Wayland, New York. These consisted of remains of both cryptogams and flowering plants, exhibiting distinctly the vegetable characters. No sphagnum was found in the deposit. The evidence was that the animal had eaten his last meal from the tender mosses and boughs of the flowering plants growing on the banks of streams and margins of swamps, and that pines and cedars formed no part of his diet.

CARRIER pigeons have been employed for a new purpose. When his Majesty of Spain was nearing Barcelona, a Spanish steamer was sent to meet *Los Navos* on the high seas, and succeeded in doing so at the distance of 150 miles from the seaport. Carrier pigeons were then liberated so as to announce in Barcelona the happy coming of Don Alphonso XII. The experiment appears to have been successful. It is said that carrier pigeons were in use among the old Roman navigators in the time of the Cæsars. The practice was discontinued for centuries, and the question has been asked by some French papers whether it is desirable to revive it for Transatlantic steamers.

THE Signal Service observer on the summit of Pike's Peak (U.S.) reports that the local storms there experienced originate over the parks to the westward on hot afternoons. On one occasion he was favoured with an excellent view of the interior structure of the clouds of a tornado, when he observed that while the cloud-bearing currents of air float toward the centre, they had a decided downward movement, but that masses of smoke-like vapour rapidly ascended through the interior funnel.

In a paper read by Capt. Shaw, of the Metropolitan Fire Brigade, at the Society of Arts on Tuesday night, an ingenious apparatus was described for enabling persons to breathe in dense smoke or poisonous vapours. It consists essentially of a close-fitting hood, with a respirator, holding a filter, the invention of Prof. Tyndall, which consists of a valve chamber and filter tube about 4 inches long, screwed on outside, with access to it from the inside by a wooden mouth-piece. The charge for the filter consists of the following materials, which are put in with the tube turned upside down, and the lower valve removed:—Half an inch deep of dry cotton-wool, an inch deep of the same wool saturated with glycerine, a thin layer of dry wool, half an inch deep of fragments of charcoal, half an inch deep of dry wool, half an inch deep of fragments of lime, and about an inch of dry wool. The whole can be put on and adjusted in a few seconds by the wearer.

THE additions to the Zoological Society's Gardens during the past week include a Pig-tailed Monkey (*Macacus nemestrinus*) from Java, presented by Dr. Cole; a Crested Porcupine (*Hystrix cristata*) from Mogadore, presented by Mr. Alfred Hay; two Chukar Partridges (*Caccabis chukar*) from North-west India, presented by Capt. Murray; a Sooty Mangabey (*Cercocebus fuliginosus*), and a Patas Monkey (*Cercopithecus ruber*) from West Africa; an Australian Goshawk (*Astur approximans*) from Australia, purchased; an Ocelot (*Felis pardalis*) from America, deposited.